PATENT SPECIFICATION

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Inventor:—CHARLES MORREY.

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International Classification :—F06b. H02g.

COMPLETE SPECIFICATION.

Improvements in or relating to Clamps for Electric Cables.

We, BROOKHIRST SWITCHGEAR LIMITED, a British Company, of Northgate Works, in the City and County of Chester, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is for improvements in or relating to clamps for electric cables.

An object of the present invention is to provide cable clamping means by which a large number of cables in an electrical wiring system (e.g. a control panel for electrical apparatus) can quickly be mounted and rigidly supported in an orderly manner, facilities being available for adding further wiring when required without interfering with the existing wiring or cabling.

According to the present invention there is provided clamping means for electric cables comprising two, three or more open-ended superposed bars between which the cables are located and spring clips or the like having limbs, the free ends of which project or are adapted to project into neighbouring open ends of the bars, in the direction of length thereof, to cause the bars to clamp the cables located between them.

This arrangement provides for clamping of cables in lateral and tiered formation and variations need not necessarily be made to suit cables of different diameter.

Preferably the clamping bars are of hollow or tubular form so as to provide the open ends to receive the clips. A particularly convenient form of bar is one of hollow rectangular section moulded or extruded from insulating material so that it can be cut off to any length required according to the number of cables to be clamped in side-by-side relationship.

[*Price 3s. 6d.*]

The clips are conveniently of U-form with resilient limbs.

The invention will be further described, by way of example, with reference to the accompanying drawings wherein:—

Figure 1 is a perspective view showing one example of the invention as applied to the clamping and supporting of a large number of cables in side-by-side relationship on a panel such as that incorporated in electrical control apparatus, the cables connecting the various pieces of apparatus on the panel;

Figure 2 is a detail perspective view of a clip incorporated in the arrangement shown in Figure 1;

Figure 3 is a view similar to Figure 2 but showing a modified form of clip;

Figure 4 is also a view similar to Figure 2 but showing a still further modified form of clip; and

Figure 5 is a diagram of one particular form of panel showing how various cables can be arranged neatly by incorporating in the panel supporting and mounting means according to the present invention.

Referring to the drawing, and more particularly Figures 1 and 2, the clamping means for the cables C comprises a plurality of clamping bars 10 of hollow rectangular section and of insulating material. One of these bars is secured against the panel 11 by means of clips 12 in the form of tongues (e.g. resilient tongues) which project partially into the ends of the bar and are secured to the panel by means of screws 13 or the like located outside the ends of the bar. The cables are laid on this bar and are clamped in position by a further and similar bar 10 located over them. The latter bar is held in position by spring clips 15 which engage in the neighbouring open ends of the super-

imposed bars. Further banks of cables are secured in position by additional bars 10 and clips 15 as shown.

The spring clips 15 are of phosphor bronze, spring steel or other resilient material, and are of U-shape with convergent limbs slightly out-turned at their extremities or free ends, as indicated at 16, so that they can readily be forced into position in the neighbouring ends of two of the clamping bars 14 and will thereby draw said clamping bars firmly towards one another to clamp the cables between them and secure the bars one upon the other.

There will of course be a number of groups of clamping bars 10 as just described spaced apart on the panel 11 with the cables C running between them generally at right-angles to the clamping bars.

Any number of clamping bars 10 clipped together may be superimposed one upon another in the groups so as to support and clamp any number of layers or banks of cables. The uppermost clamping bar of each group can of course at any time have a further clamping bar clipped to it when it is desired to add further cabling to the panel or board.

In some cases, particularly where the panel or board is of insulating material, the lowermost clamping bar 10 in the arrangement above described may be dispensed with, the lowermost layer of cables then being clamped directly against the panel or board 11 by the first of the clamping bars located above it. The securing clips for said lowermost bar are preferably in the form of spring tongues secured by screws to the panel adjacent the ends of the bar.

It will be appreciated that it is a simple matter for the wire-man to cut lengths of the hollow section clamping bar 10 to any length required according to the number of cables he wishes to clamp together in side-by-side relationship in one layer.

Whilst clamping bars of rectangular section have been described as the preferable form, bars of other section can of course be used, such as circular section, the spring limbs of the clips being modified accordingly if necessary. Furthermore, the bars need not be hollow or tubular throughout their length, but may merely have cavities in their ends to receive the clips.

The limbs of the clips at or adjacent their free ends may have a turned-back indent or tongue or the like 17 (see Figures 3 and 4), pointed or otherwise, so as to minimise movement or dislodgment due for example, to vibration. Instead of or in addition to making the clips of resilient material they may incorporate spring means to urge their limbs together in which case said limbs may be pivoted one to the other.

The webs of the clips may have a slight radius or be curled back as indicated, for instance, at 18 in Figure 3 to avoid chafing of the insulation of a wire which may be in close proximity to the clip.

WHAT WE CLAIM IS:—

1. Clamping means for electric cables comprising two, three or more open-ended superposed bars between which the cables are located and spring clips or the like having limbs, the free ends of which project or are adapted to project into neighbouring open ends of the bars, in the direction of length thereof, to cause the bars to clamp the cables located between them.

2. Clamping means as claimed in Claim 1 wherein the clamping bars are of hollow or tubular form so as to provide the open ends to receive the limbs of the clips or the like.

3. Clamping means as claimed in either of the preceding claims wherein the clamping bars are of hollow rectangular section moulded or extruded from insulating material.

4. Clamping means as claimed in any of the preceding claims wherein the clips are of U-form with resilient limbs.

5. Clamping means as claimed in Claim 4 wherein the clips are of springy material and are of U-shape with convergent limbs slightly out-turned at their extremities or free ends.

6. Clamping means as claimed in Claim 4 or 5 wherein the clips adjacent their free ends have turned-back indents, tongues or the like.

7. Clamping means as claimed in Claim 6 wherein the turned-back indents or tongues are pointed.

8. Clamping means as claimed in any of the preceding claims wherein the clips have a web which is given a radius or curl at its edges to avoid chafing of the insulation of a wire which may be in close proximity to the clip.

9. Cable clamping means substantially as herein described with reference to Figures 1 and 2 or modifications thereof as described with reference to Figures 3 and 4 of the accompanying drawings.

E. R. ROYSTON & CO.,
Chartered Patent Agents,
Tower Building,
Water Street,
Liverpool 3.

PROVISIONAL SPECIFICATION.

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This invention is for improvements in or relating to cable clamping means.

An object of the present invention is to provide cable clamping means by which a large number of cables in an electrical wiring system (e.g. a control panel for electrical apparatus) can quickly be mounted and rigidly supported in an orderly manner, facilities being available for adding further wiring when required without interfering with the existing wiring or cabling.

According to the present invention there is provided cable clamping means comprising an open-ended clamping bar or bars and clips adapted to engage in the ends of said bar or bars so as to cause it or them to clamp a cable or cables located under or between the bar or bars. Preferably the clamping bar or bars is or are of hollow or tubular form so as to provide the open ends to receive the clips. A particularly convenient form of bar is one of hollow rectangular section moulded or extruded from insulating material so that it can be cut off to any length required according to the number of cables to be clamped in side-by-side relationship.

Where two clamping bars are arranged to clamp cables between them the clips are conveniently of U-form with resilient limbs which engage respectively in the neighbouring ends of the two bars. In cases where a single clamping bar is arranged to clamp cables directly against a panel, i.e. without interposed spacing means or insulation, the clips may be in the form of tongues secured by screws or the like to the panel and projecting into the ends of the bar and clamping down on the wall of the bar adjacent the panel. These tongues may if desired be bent to give them some resiliency.

One specific embodiment of the invention will now be described by way of example as applied to the clamping and supporting of a large number of cables in side-by-side relationship on a panel such as that incorporated in electrical control apparatus, the cabling connecting the various pieces of apparatus on the panel.

The clamping means for the cables comprises a plurality of clamping bars of hollow rectangular section and of insulating material. A series of such bars are secured against the panel by means of clips in the form of tongues which project partially into the ends of the bars and are secured to the panel by means of screws or like located outside the ends of the bars. The cables are laid on these bars and are clamped in position by further and similar bars located over them. The latter bars are held in position by spring clips which engage in the neighbouring open ends of the superimposed bars.

The just mentioned spring clips are of phosphor bronze, spring steel or other resilient material, and are of U-shape with convergent limbs slightly out-turned at their extremities or free ends so that they can readily be forced into position in the neighbouring ends of two of the clamping bars and will thereby draw said clamping bars firmly towards one another to clamp the cables between them and secure the bars one upon the other.

There will of course be a number of groups of clamping bars as just described spaced apart on the panel with the cables running between them generally at right-angles to the clamping bars.

Any number of clamping bars clipped together may be superimposed one upon another in the groups so as to support and clamp any number of layers of cables. The uppermost clamping bar of each group can of course at any time have a further clamping bar clipped to it when it is desired to add further cabling to the panel or board.

In some cases, particularly where the panel or board is of insulating material, the lowermost clamping bar in the arrangement above described may be dispensed with, the lowermost layer of cables then being clamped directly against the panel or board by the first of the clamping bars located above it. The securing clips for said lowermost bar are in the form of spring tongues secured by screws to the panel adjacent the ends of the bar.

It will be appreciated that it is a simple matter for the wire-man to cut lengths of the hollow section clamping bar to any length required according to the number of cables he wishes to clamp together in side-by-side relationship in one layer.

Whilst clamping bars of rectangular section have been described as the preferable form, bars of other section can of course be used, such as circular section, the spring limbs of the clips being modified accordingly if necessary. Furthermore, the bars need not be hollow or tubular throughout

their length, but may merely have cavities in their ends to receive the clips.

The limbs of the clips at or adjacent their free ends may have a turned-back indent or tongue or the like, pointed or otherwise, so as to minimise movement or dislodgment due for example, to vibration. Instead of or in addition to making the clips of resilient material they may incorporate spring means to urge their limbs together in which case said limbs may be pivoted one to the other.

E. R. ROYSTON & CO.,
Chartered Patent Agents,
Tower Building,
Water Street,
Liverpool 3.

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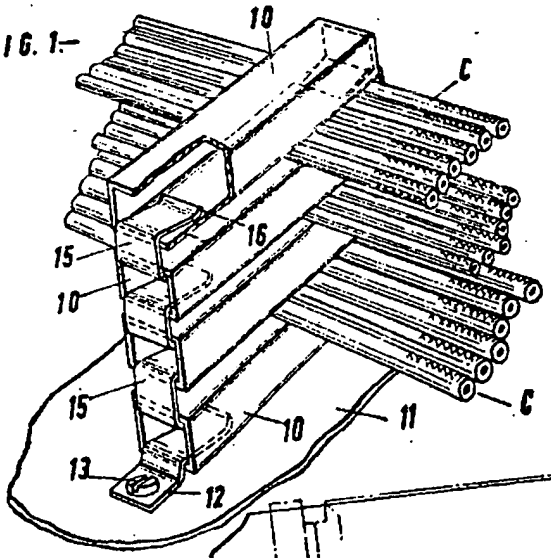
807,721 COMPLETE SPECIFICATION
1 SHEET

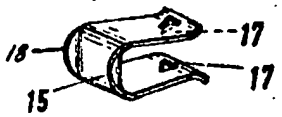
This drawing is a reproduction of the Original on a reduced scale.

-FIG. 1.-

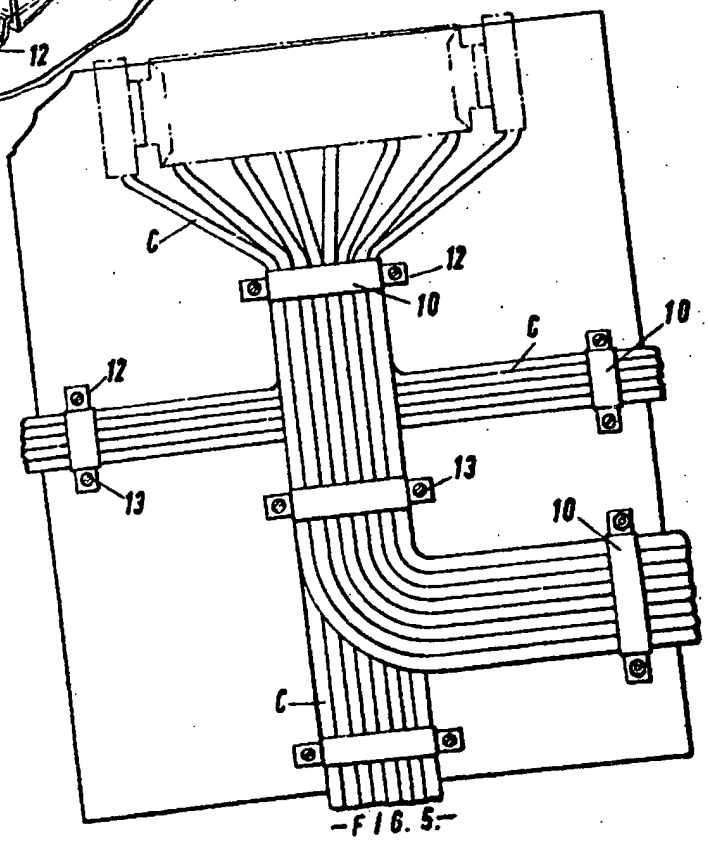


-FIG. 2.-

-FIG. 3.-



-FIG. 4.-



-FIG. 5.-

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